

1. A method for producing a synthetic material part, comprising:

5 spray applying with a spray device a material having at least a polymerizable synthetic material onto a base in succeeding layers such that each layer of the spray applied material is substantially continuously polymerized by the spray device and has a viscosity which permits working of the applied material in an unpolymerized condition  
10 thereof with the spray device; and  
hardening at least one already applied layer prior to the application of subsequent layers.

15 2. A method for producing a synthetic material part according to claim 1, wherein each individual layer is applied in droplet form, at least one of the viscosity and the physical condition of the droplets changing as the droplets are applied such that at least one of mechanical loading and mechanical working can be performed on the  
20 layer formed by the droplets.

25 3. A method for producing a synthetic material part according to claim 1, wherein the polymerization of the layers is effected by electromagnetic radiation in a manner such that the spray device is not irradiated by the electromagnetic radiation.

30 4. A method for producing a synthetic material part according to claim 1, wherein each layer is polymerized prior to the application thereonto of the next layer to a polymerized condition which is less than complete polymerization yet is such that the layer supports the retention of the next layer applied thereon.

35 5. A method for producing a synthetic material part according to claim 1, wherein the material which is spray applied is a polymerizable wax-like dental material having

up to 70% by weight of at least one of a polymerizable monomer and oligomer, from 0.01 to 10% by weight of a polymerization initiator, and at least 20% by weight of a mixture having a selected one of wax-like and a flowable monomer and a color pigment, and the dental material has the property that one of its physical condition and its viscosity changes within a relatively small range of temperature flux.

6. A method for producing a synthetic material part according to claim 1, wherein the step of spray applying the material includes applying a selected one of a material having a poly addition of a character such that polymerization of the spray applied material is not required and a material having a poly addition of a character such that polymerization of the material is required.

7. A method for producing a synthetic material part according to claim 1, wherein the spray applied material is heated before being spray applied to a temperature less than the polymerization temperature of the material.

8. A method for producing a synthetic material part according to claim 1, and further comprising thermally treating the synthetic material part following the hardening step.

9. A method for producing a synthetic material part according to claim 1, wherein the spray applied material is a selected one of a material having a wax-like polymerizable substance having an ester of a carbon acid and a polymerizable alcohol and a material having an ester of an alcohol and a polymerizable carbon acid derivative of between about 20% to 99.99% by weight of the material.

10. A method for producing a synthetic material part according to claim 1, wherein the synthetic material part is a dental restorative part and the production of the dental restorative part includes handling the dental restorative part with a color imparting material such that the dental restorative part has a color imparted by the color imparting material.

11. A method for producing a synthetic material part according to claim 10, wherein the step of spray applying a material includes contemporaneously spray applying a material onto a plurality of bases each of which, upon the build up and polymerization of the material sprayed thereon, forms a dental restorative part.

12. A method for producing a synthetic material part according to claim 1, wherein one of the layers applied onto an already applied layer is relatively more transparent than the already applied layer.

13. A method for producing a synthetic material part according to claim 1, wherein the outermost layer of the completed synthetic material part is formed of the first layer of the material which is spray applied and this first layer of material serves as a form for succeeding layers.

14. A method for producing a synthetic material part according to claim 1, wherein the step of spray applying a material includes spray applying a material in a three dimensional printing process, and the step of hardening includes intermittently hardening the applied layers between the applications of the first and last layers.

15. A method for producing a synthetic material part according to claim 5, wherein the polymerization initiator is between 0.5 to 5 % by weight of the wax-like dental material.

16. A method for producing a synthetic material part according to claim 15, wherein the polymerization initiator is between 0.5 to 2 % by weight of the wax-like dental material.